

CLAIMS

Now, therefore, at least the following is claimed:

- 1 1. A radio frequency cable network device that implements at least one gateway service,
2 the device comprising:

3 at least one RF cable interface that is attachable to at least one RF cable, the at
4 least one RF cable being at least part of an RF cable data network, the
5 at least one RF cable at least providing downstream communications in
6 the RF cable data network, the RF cable data network providing bi-
7 directional data connectivity between the RF cable network device at a
8 customer premise and a cable modem termination device;
9 at least one customer premise data interface that is electromagnetically
10 connectable to at least one customer premise data communications
11 medium, the at least one customer premise data communications
12 medium further being electromagnetically connectable to at least one
13 first customer premise equipment (CPE) data device, the at least one
14 RF cable interface and the at least one customer premise data interface
15 capable of providing at least part of a communications facility that can
16 be used in a conveyance of data between the at least one first CPE data
17 device and the at least one RF cable interface;
18 logic configured to store information identifying at least one IP address, the at
19 least one IP address being assigned to the RF cable network device;
20 logic configured to forward packets containing IP datagrams between the RF
21 cable network and at least one first customer premise equipment (CPE)
22 data device; and
23 logic configured to provide at least one gateway service to the at least one first
24 CPE data device, the at least one gateway service facilitating

25 communications of the at least one first CPE data device that are
26 carried in IP datagrams over the RF cable data network.

- 1 2. The RF cable network device of claim 1, wherein the RF cable data network further
2 comprises at least one telco return path that at least provides upstream
3 communications in the RF cable data network.
- 1 3. The RF cable network device of claim 1, wherein the at least one gateway service is
2 selected from the group consisting of: network address translation (NAT), firewall,
3 proxy, tunneling, and virtual private networking (VPN).
- 1 4. The RF cable network device of claim 3, wherein the NAT gateway service performs
2 at least one type of NAT selected from the group consisting of: traditional NAT, basic
3 NAT, network address-port translation (NAPT), bi-directional NAT, and twice NAT.
- 1 5. The RF cable network device of claim 1, wherein the at least one gateway service is
2 selected the group consisting of: firewall and proxy.
- 1 6. The RF cable network device of claim 5, wherein the firewall gateway service
2 performs at least one of the firewall types selected from the group consisting of:
3 packet-filtering, circuit-level gateway, and application layer gateway.
- 1 7. The RF cable network device of claim 6, wherein the packet-filtering firewall type
2 provides network security utilizing a state-based packet inspection to protect the at
3 least first CPE data device.
- 1 8. The RF cable network device of claim 5, wherein the at least one gateway service
2 performs at least one of the gateway service types selected from the group consisting
3 of: circuit-level gateway and application layer gateway.

- 1 9. The RF cable network device of claim 8, wherein the at least one gateway service
2 proxies at least one session of the at least one first CPE data device, the at least one
3 session communicated by the at least one first CPE data device over the at least one
4 customer premise data communications medium, and the at least one session
5 communicated through the RF cable network device and into the RF cable network.
- 1 10. The RF cable network device of claim 3 further comprising logic configured
2 dynamically assign at least one customer network IP address to the at least one first
3 CPE data device.
- 1 11. The RF cable network device of claim 10, wherein the logic configured to
2 dynamically assign at least one customer network IP address comprises Dynamic Host
3 Configuration Protocol (DHCP) server logic.
- 1 12. The RF cable network device of claim 10, wherein the at least one customer network
2 IP address is from a different IP address realm than the at least one IP address for RF
3 cable data network access.
- 1 13. The RF cable network device of claim 3, wherein the RF cable network device
2 appears on the RF cable data network to be the same as an ethernet attached cable
3 modem that conforms to at least one version of a DOCSIS (Data-Over-Cable Service
4 Interface Specification) standard.

- 1 14. The RF cable network device of claim 3, wherein the RF cable network device is a
2 set-top box (STB) that further comprises:
3 at least one audio/video (A/V) customer premise equipment (CPE) interface
4 that is electromagnetically connectable to at least one customer
5 premise audio/video (A/V) communications medium;
6 logic configured to select at least one audio/video (A/V) program that is
7 communicated to the at least one RF cable interface over at least one
8 RF cable audio/visual (A/V) network;
9 logic configured to receive the selected at least one A/V program from the RF
10 cable A/V network; and
11 logic configured to provide the received at least one A/V program to at least
12 one audio/video (A/V) customer premise equipment (CPE) device that
13 is electromagnetically connectable to the at least one customer premise
14 A/V communications medium, the at least one A/V program
15 communicated through the at least one A/V CPE interface and over the
16 at least one customer premise A/V communications medium.
- 1 15. The set-top box of claim 14, wherein the at least one A/V CPE device is selected from
2 the group consisting of: a television, a video recorder, a stereo, and an audio recorder.
- 1 16. The set-top box of claim 14, wherein the set-top box appears on the RF cable data
2 network to be the same as an ethernet attached cable modem that conforms to at least
3 one version of a DOCSIS (Data-Over-Cable Service Interface Specification) standard.
- 1 17. The set-top box of claim 16, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the set-top box further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also

5 considered to be assigned to the set-top box, the at least one DOCSIS CPE IP address
6 being different from the at least one DOCSIS CM IP address.

- 1 18. The set-top box of claim 14, wherein the set-top box appears on the RF cable data
2 network to conform to at least one version of a DAVIC (Digital Audio Visual
3 Council) cable modem standard.
- 1 19. The set-top box of claim 14, wherein at least one option card is added to a base unit of
2 the set-top box to provide at least support to the at least one gateway service.
- 1 20. The RF cable network device of claim 3, wherein the RF cable network device is a
2 cable modem (CM).
- 1 21. The cable modem of claim 20, wherein the cable modem (CM) appears on the RF
2 cable data network to be the same as an ethernet attached cable modem that conforms
3 to at least one version of a DOCSIS (Data-Over-Cable Service Interface Specification)
4 standard.
- 1 22. The cable modem of claim 21, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the cable modem further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also
5 considered to be assigned to the cable modem, the at least one DOCSIS CPE IP
6 address being different from the at least one DOCSIS CM IP address.
- 1 23. The cable modem of claim 20, wherein the cable modem (CM) appears on the RF
2 cable data network to conform to at least one version of a DAVIC (Digital Audio
3 Visual Council) cable modem standard.

- 1 27. The RF cable network device of claim 25, wherein the RF cable network device
2 appears on the RF cable data network to be the same as an ethernet attached cable
3 modem that conforms to at least one version of a DOCSIS (Data-Over-Cable Service
4 Interface Specification) standard.
- 1 28. The RF cable network device of claim 25, wherein the at least one wired customer
2 premise data communications medium is telephone wiring at the customer premise,
3 and wherein the data is frequency-division multiplexed with a signal for carrying an
4 analog POTS voice-frequency band signal.
- 1 29. The RF cable network device of claim 25, wherein the at least one wired customer
2 premise data communications medium is electrical power wiring at the customer
3 premise, and wherein the data is frequency-division multiplexed with a signal for
4 carrying electrical power to appliances at the customer premise.
- 1 30. The RF cable network device of claim 25, wherein the RF cable network device is a
2 set-top box (STB) that further comprises:
3 at least one audio/video (A/V) customer premise equipment (CPE) interface
4 that is electromagnetically connectable to at least one customer
5 premise audio/video (A/V) communications medium;
6 logic configured to select at least one audio/video (A/V) program that is
7 communicated to the at least one RF cable interface over at least one
8 RF cable audio/visual (A/V) network;
9 logic configured to receive the selected at least one A/V program from the RF
10 cable A/V network; and
11 logic configured to provide the received at least one A/V program to at least
12 one audio/video (A/V) customer premise equipment (CPE) device that
13 is electromagnetically connectable to the at least one customer premise
14 A/V communications medium, the at least one A/V program

communicated through the at least one A/V CPE interface and over the at least one customer premise A/V communications medium.

31. The set-top box of claim 30, wherein the at least one A/V CPE device is selected from the group consisting of: a television, a video recorder, a stereo, and an audio recorder.

32. The set-top box of claim 30 that implements at least one gateway service by further comprising:

logic configured to provide at least one gateway service to the at least one first CPE data device, the at least one gateway service facilitating communications of the at least one first CPE data device that are carried in IP datagrams over the RF cable data network.

33. The set-top box of claim 32, wherein the at least one gateway service is selected from the group consisting of: network address translation (NAT), firewall, proxy, tunneling, and virtual private networking (VPN).

34. The set-top box of claim 33, wherein the RF cable network device appears on the RF cable data network to be the same as an ethernet attached cable modem that conforms to at least one version of a DOCSIS (Data-Over-Cable Service Interface Specification) standard.

35. The RF cable network device of claim 25, wherein the RF cable network device is a cable modem (CM)

36. The cable modem of claim 35 that implements at least one gateway service by further comprising:

logic configured to provide at least one gateway service to the at least one first CPE data device, the at least one gateway service facilitating communications of the at least one first CPE data device that are carried in IP datagrams over the RF cable data network

1 37. The cable modem of claim 36, wherein the at least one gateway service is selected
2 from the group consisting of: network address translation (NAT), firewall, proxy,
3 tunneling, and virtual private networking (VPN).

1 38. The cable modem of claim 37, wherein the RF cable network device appears on the
2 RF cable data network to be the same as an ethernet attached cable modem that
3 conforms to at least one version of a DOCSIS (Data-Over-Cable Service Interface
4 Specification) standard.

1 39. A radio frequency (RF) cable network device configured to provide data connectivity
2 over an RF cable network, the device comprising:

3 at least one RF cable interface that is attachable to at least one RF cable, the at
4 least one RF cable being at least part of an RF cable data network, the
5 at least one RF cable at least providing downstream communications in
6 the RF cable data network, the RF cable data network providing bi-
7 directional data connectivity between the RF cable network device at a
8 customer premise and a cable modem termination device;

9 at least one customer premise data interface that is electromagnetically
10 connectable to at least one customer premise data communications
11 medium, the at least one customer premise data communications
12 medium further being electromagnetically connectable to at least one
13 first customer premise equipment (CPE) data device, the at least one
14 RF cable interface and the at least one customer premise data interface
15 capable of providing at least part of a communications facility that can
16 be used in a conveyance of data between the at least one first CPE data
17 device and the at least one RF cable interface;

18 logic configured to forward data between the at least one RF cable interface
19 and the at least one customer premise data interface, the at least one
20 customer premise data communications medium being at least one
21 wireless customer premise data communications medium.

- 1 40. The RF cable network device of claim 39, wherein option cards are added to a base
2 unit of the RF cable network device to support the at least one wireless customer
3 premise data communications medium.
- 1 41. The RF cable network device of claim 39, wherein the RF cable network device
2 appears on the RF cable data network to be the same as an ethernet attached cable
3 modem that conforms to at least one version of a DOCSIS (Data-Over-Cable Service
4 Interface Specification) standard.
- 1 42. The RF cable network device of claim 41, wherein the at least one wireless customer
2 premise data communications medium conforms to at least one version of at least one
3 protocol selected from the group consisting of: Bluetooth, IEEE 802.11a, IEEE
4 802.11b, and HomeRF.
- 1 43. The RF cable network device of claim 39, wherein the at least one wireless customer
2 premise data communications medium conforms to at least one version of at least one
3 protocol selected from the group consisting of: Bluetooth, IEEE 802.11a, IEEE
4 802.11b, and HomeRF.

44. A set-top box (STB) comprising:

at least one RF cable interface that is attachable to at least one RF cable audio/visual (A/V) network;

at least one audio/video (A/V) customer premise equipment (CPE) interface that is electromagnetically connectable to at least one customer premise audio/video (A/V) communications medium;

logic configured to select at least one audio/video (A/V) program that is communicated to the at least one RF cable interface over the at least one RF cable audio/visual (A/V) network;

logic configured to receive the selected at least one A/V program from the RF cable A/V network;

logic configured to provide the received at least one A/V program to at least one audio/video (A/V) customer premise equipment (CPE) device that is electromagnetically connectable to the at least one customer premise A/V communications medium, the at least one A/V program communicated through the at least one A/V CPE interface and over the at least one customer premise A/V communications medium;

at least one RF cable interface that is attachable to at least one RF cable, the at least one RF cable being at least part of an RF cable data network, the at least one RF cable at least providing downstream communications in the RF cable data network, the RF cable data network providing bi-directional data connectivity between the RF cable network device at a customer premise and a cable modem termination device;

logic configured to store information identifying at least one IP address, the at least one IP address being assigned to the set-top box; and

logic configured to forward packets containing IP datagrams from the set-top box over the RF cable data network

- 1 45. The set-top box of claim 44, wherein the at least one A/V CPE device is selected from
2 the group consisting of: a television, a video recorder, a stereo, and an audio recorder.

- 1 46. The set-top box of claim 44, wherein the set-top box appears on the RF cable data
2 network to be the same as an ethernet attached cable modem that conforms to at least
3 one version of a DOCSIS (Data-Over-Cable Service Interface Specification) standard.

- 1 47. The set-top box of claim 46, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the set-top box further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also
5 considered to be assigned to the set-top box, the at least one DOCSIS CPE IP address
6 being different from the at least one DOCSIS CM IP address.

- 1 48. The set-top box of claim 44 further comprising:
2 at least one customer premise data interface that is electromagnetically
3 connectable to at least one customer premise data communications
4 medium, the at least one customer premise data communications
5 medium further being electromagnetically connectable to at least one
6 first customer premise equipment (CPE) data device, the at least one
7 RF cable interface and the at least one customer premise data interface
8 capable of providing at least part of a communications facility that can
9 be used in a conveyance of data between the at least one first CPE data
10 device and the at least one RF cable interface.

- 1 49. The set-top box of claim 48, wherein the set-top box appears on the RF cable data
2 network to be the same as an ethernet attached cable modem that conforms to at least
3 one version of a DOCSIS (Data-Over-Cable Service Interface Specification) standard.

- 1 50. The set-top box of claim 49, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the set-top box further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also
5 considered to be assigned to the set-top box, the at least one DOCSIS CPE IP address
6 being different from the at least one DOCSIS CM IP address.
- 1 51. The set-top box of claim 48 further comprising:
2 logic configured to provide at least one gateway service to the at least one first
3 CPE data device, the at least one gateway service facilitating
4 communications of the at least one first CPE data device that are
5 carried in IP datagrams over the RF cable data network.
- 1 52. The set-top box of claim 51, wherein the at least one gateway service is selected from
2 the group consisting of: network address translation (NAT), firewall, proxy, tunneling,
3 and virtual private networking (VPN).
- 1 53. The set-top box of claim 52, wherein the set-top box appears on the RF cable data
2 network to be the same as an ethernet attached cable modem that conforms to at least
3 one version of a DOCSIS (Data-Over-Cable Service Interface Specification) standard.

- 1 54. The set-top box of claim 53, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the set-top box further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also
5 considered to be assigned to the set-top box, the at least one DOCSIS CPE IP address
6 being different from the at least one DOCSIS CM IP address.

DOCSIS is a registered trademark of ARRIS Group, Inc.

1 55. A method of implementing at least one gateway service in a radio frequency (RF)
2 cable network device, the method comprising the steps performed in the RF cable
3 network device of:

4 providing at least one RF cable interface that is attachable to at least one RF
5 cable, the at least one RF cable being at least part of an RF cable data
6 network, the at least one RF cable at least providing downstream
7 communications in the RF cable data network, the RF cable data
8 network providing bi-directional data connectivity between the RF
9 cable network device at a customer premise and a cable modem
10 termination device;

11 providing at least one customer premise data interface that is
12 electromagnetically connectable to at least one customer premise data
13 communications medium, the at least one customer premise data
14 communications medium further being electromagnetically
15 connectable to at least one first customer premise equipment (CPE)
16 data device, the at least one RF cable interface and the at least one
17 customer premise data interface capable of providing at least part of a
18 communications facility that can be used in a conveyance of data
19 between the at least one first CPE data device and the at least one RF
20 cable interface;

21 storing information identifying at least one IP address, the at least one IP
22 address being assigned to the RF cable network device;

23 forwarding packets containing IP datagrams between the RF cable network
24 and at least one first customer premise equipment (CPE) data device;
25 and

26 providing at least one gateway service to the at least one first CPE data device,
27 the at least one gateway service facilitating communications of the at
28 least one first CPE data device that are carried in IP datagrams over the
29 RF cable data network.

56. The method of claim 55, wherein the RF cable data network further comprises at least one telco return path that at least provides upstream communications in the RF cable data network.
 57. The method of claim 55, wherein the at least one gateway service is selected from the group consisting of: network address translation (NAT), firewall, proxy, tunneling, and virtual private networking (VPN).
 58. The method of claim 55, wherein the RF cable network device appears on the RF cable data network to be the same as an ethernet attached cable modem that conforms to at least one version of a DOCSIS (Data-Over-Cable Service Interface Specification) standard.

- 1 59. A method of providing data connectivity over an RF cable network, the method
2 comprising the steps performed in a radio frequency (RF) cable network device of:
3 providing at least one RF cable interface that is attachable to at least one RF
4 cable, the at least one RF cable being at least part of an RF cable data
5 network, the at least one RF cable at least providing downstream
6 communications in the RF cable data network, the RF cable data
7 network providing bi-directional data connectivity between the RF
8 cable network device at a customer premise and a cable modem
9 termination device;
10 providing at least one customer premise data interface that is
11 electromagnetically connectable to at least one customer premise data
12 communications medium, the at least one customer premise data
13 communications medium further being electromagnetically
14 connectable to at least one first customer premise equipment (CPE)
15 data device, the at least one RF cable interface and the at least one
16 customer premise data interface capable of providing at least part of a
17 communications facility that can be used in a conveyance of data
18 between the at least one first CPE data device and the at least one RF
19 cable interface;
20 forwarding data between the at least one RF cable interface and the at least one
21 customer premise data interface;
22 multiplexing the data over the at least one customer premise data
23 communications medium using frequency-division multiplexing, the at
24 least one customer premise data communications medium being at
25 least one wired customer premise data communications medium.
- 1 60. The method of claim 59, wherein the RF cable network device appears on the RF
2 cable data network to be the same as an ethernet attached cable modem that conforms

3 to at least one version of a DOCSIS (Data-Over-Cable Service Interface Specification)
4 standard.

- 1 61. The method of claim 59, wherein the at least one wired customer premise data
2 communications medium is telephone wiring at the customer premise, and wherein
3 the data is frequency-division multiplexed with a signal for carrying an analog POTS
4 voice-frequency band signal.
- 1 62. The method of claim 59, wherein the at least one wired customer premise data
2 communications medium is electrical power wiring at the customer premise, and
3 wherein the data is frequency-division multiplexed with a signal for carrying electrical
4 power to appliances at the customer premise.

- 1 63. A method of providing data connectivity over an RF cable network, the method
2 comprising the steps performed in a radio frequency (RF) cable network device of:
3 providing at least one RF cable interface that is attachable to at least one RF
4 cable, the at least one RF cable being at least part of an RF cable data
5 network, the at least one RF cable at least providing downstream
6 communications in the RF cable data network, the RF cable data
7 network providing bi-directional data connectivity between the RF
8 cable network device at a customer premise and a cable modem
9 termination device;
10 providing at least one customer premise data interface that is
11 electromagnetically connectable to at least one customer premise data
12 communications medium, the at least one customer premise data
13 communications medium further being electromagnetically
14 connectable to at least one first customer premise equipment (CPE)
15 data device, the at least one RF cable interface and the at least one
16 customer premise data interface capable of providing at least part of a
17 communications facility that can be used in a conveyance of data
18 between the at least one first CPE data device and the at least one RF
19 cable interface;
20 forwarding data between the at least one RF cable interface and the at least one
21 customer premise data interface, the at least one customer premise data
22 communications medium being at least one wireless customer premise
23 data communications medium.

- 1 64. The method of claim 63, wherein the RF cable network device appears on the RF
2 cable data network to be the same as an ethernet attached cable modem that conforms
3 to at least one version of a DOCSIS (Data-Over-Cable Service Interface Specification)
4 standard.

- 1 65. The method of claim 63, wherein the at least one wireless customer premise data
2 communications medium conforms to at least one version of at least one protocol
3 selected from the group consisting of: Bluetooth, IEEE 802.11a, IEEE 802.11b, and
4 HomeRF.

1 66. A method of providing IP connectivity to a set-top box (STB), the method comprising
2 the steps performed in the set-top box of:

3 providing at least one RF cable interface that is attachable to at least one RF
4 cable audio/visual (A/V) network;

5 providing at least one audio/video (A/V) customer premise equipment (CPE)
6 interface that is electromagnetically connectable to the at least one
7 customer premise audio/video (A/V) communications medium;

8 selecting at least one audio/video (A/V) program that is communicated to the
9 at least one RF cable interface over at least one RF cable audio/visual
10 (A/V) network;

11 receiving the selected at least one A/V program from the RF cable A/V
12 network;

13 providing the received at least one A/V program to at least one audio/video
14 (A/V) customer premise equipment (CPE) device that is
15 electromagnetically connectable to the at least one customer premise
16 A/V communications medium, the at least one A/V program
17 communicated through the at least one A/V CPE interface and over the
18 at least one customer premise A/V communications medium;

19 providing at least one RF cable interface that is attachable to at least one RF
20 cable, the at least one RF cable being at least part of an RF cable data
21 network, the at least one RF cable at least providing downstream
22 communications in the RF cable data network, the RF cable data
23 network providing bi-directional data connectivity between the RF
24 cable network device at a customer premise and a cable modem
25 termination device;

26 storing information identifying at least one IP address, the at least one IP
27 address being assigned to the set-top box; and

28 forwarding packets containing IP datagrams from the set-top box over the RF
29 cable data network.

67. The method of claim 66, wherein the at least one A/V CPE device is selected from the group consisting of: a television, a video recorder, a stereo, and an audio recorder.
 68. The method of claim 66 further comprising the step performed in the set-top box of: providing at least one customer premise data interface that is electromagnetically connectable to at least one customer premise data communications medium, the at least one customer premise data communications medium further being electromagnetically connectable to at least one first customer premise equipment (CPE) data device, the at least one RF cable interface and the at least one customer premise data interface capable of providing at least part of a communications facility that can be used in a conveyance of data between the at least one first CPE data device and the at least one RF cable interface.
 69. The method of claim 68 further comprising the step performed in the set-top box of: providing at least one gateway service to the at least one first CPE data device, the at least one gateway service facilitating communications of the at least one first CPE data device that are carried in IP datagrams over the RF cable data network.
 70. The method of claim 69, wherein the at least one gateway service is selected from the group consisting of: network address translation (NAT), firewall, proxy, tunneling, and virtual private networking (VPN).
 71. The method of claim 70, wherein the set-top box appears on the RF cable data network to be the same as an ethernet attached cable modem that conforms to at least one version of a DOCSIS (Data-Over-Cable Service Interface Specification) standard.

- 1 72. A radio frequency (RF) cable network device that implements at least one integrated
2 gateway service, the device comprising:
3 at least one RF cable interface that is attachable to at least one RF cable, the at
4 least one RF cable being at least part of an RF cable data network, the
5 at least one RF cable at least providing downstream communications in
6 the RF cable data network, the RF cable data network providing bi-
7 directional data connectivity between the RF cable network device at a
8 customer premise and a cable modem termination device;
9 at least one customer premise data interface that is electromagnetically
10 connectable to at least one customer premise data communications
11 medium, the at least one customer premise data communications
12 medium further being electromagnetically connectable to at least one
13 first customer premise equipment (CPE) data device, the at least one
14 RF cable interface and the at least one customer premise data interface
15 capable of providing at least part of a communications facility that can
16 be used in a conveyance of data between the at least one first CPE data
17 device and the at least one RF cable interface;
18 logic configured to store information identifying at least one IP address, the at
19 least one IP address being assigned to the RF cable network device;
20 logic configured to maintain information that provides a forward direction
21 mapping between first upstream data and second upstream data, the
22 first upstream data being received on the at least one customer premise
23 data interface and being received from the at least one first CPE data
24 device, the second upstream data being transmitted into the RF cable
25 data network and being transmitted by the RF cable network device;
26 logic configured to maintain information that provides a reverse direction
27 mapping between first downstream data and second downstream data,
28 the first downstream data being received on the at least one RF cable
29 interface and being received from the RF cable data network, the
30 second downstream data being transmitted on the at least one customer

31 premise data interface and being transmitted by the RF cable network
32 device;
33 logic configured to receive at least one first medium access control (MAC)
34 frame that is at least part of the first upstream data;
35 logic configured to form at least one first IP datagram at least based upon the
36 at least one first MAC frame, at least based upon the at least one IP
37 address, and at least based upon the forward direction mapping, the at
38 least one first IP datagram comprising a source IP address field, the at
39 least one IP address being placed into the source IP address field of the
40 at least one first IP datagram;
41 logic configured to transmit the at least one first IP datagram that is at least
42 part of the second upstream data;
43 logic configured to receive at least one second IP datagram that is at least part
44 of the first downstream data, the at least one second IP datagram
45 comprising a destination IP address field that contains the at least one
46 IP address;
47 logic configured to form at least one second medium access control (MAC)
48 frame at least based upon the at least one second IP datagram, at least
49 based upon the at least one IP address, and at least based upon the
50 reverse direction mapping; and
51 logic configured to transmit the at least one second MAC frame that is at least
52 part of the second downstream data.

- 1 73. The RF cable network device of claim 72, wherein the RF cable data network further
2 comprises at least one telco return path that at least provides upstream
3 communications in the RF cable data network.

- 1 74. The RF cable network device of claim 72, wherein the at least one first MAC frame
2 comprises a third IP datagram, wherein the at least one second MAC frame comprises
3 a fourth IP datagram, and wherein the RF cable network device is configured to

4 perform network address translation (NAT), NAT being a gateway service that
5 translates information in IP datagrams.

1 75. The RF cable network device of claim 74, wherein the NAT performed is at least one
2 type of NAT selected from the group consisting of: traditional NAT, basic NAT,
3 network address-port translation (NAPT), bi-directional NAT, and twice NAT.

1 76. The RF cable network device of claim 74 being further configured to perform at least
2 one application layer gateway (ALG) service.

1 77. The RF cable network device of claim 76, wherein the application layer gateway
2 service provides gateway services to at least one version of at least one TCP/IP
3 (transmission control protocol/internet protocol) suite application protocol that is
4 selected from the group of consisting of: telnet, rlogin, file transfer protocol (FTP),
5 trivial file transfer protocol (TFTP), network file system (NFS), electronic mail,
6 simple mail transfer protocol (SMTP), post office protocol (POP), internet message
7 access protocol (IMAP), multipurpose internet mail extensions (MIME), hyper-text
8 transfer protocol (HTTP), real-time transport protocol (RTP), and simple network
9 management protocol (SNMP).

- 1 78. The RF cable network device of claim 74, wherein the at least one customer premise
2 communications medium is further electromagnetically connectable to at least one
3 second customer premise equipment (CPE) data device that has IP connectivity
4 through the RF cable network device to the RF cable data network without utilizing
5 NAT.
- 1 79. The RF cable network device of claim 74, wherein the at least one customer premise
2 communications medium is further electromagnetically connectable to at least one
3 second customer premise equipment (CPE) data device, the RF cable network device
4 further comprising logic configured to block IP connectivity between the at least one
5 second customer premise equipment (CPE) data device and the RF cable data
6 network.

1 80. The RF cable network device of claim 74, wherein the RF cable network device is a
2 set-top box (STB) that further comprises:

3 at least one audio/video (A/V) customer premise equipment (CPE) interface
4 that is electromagnetically connectable to at least one customer
5 premise audio/video (A/V) communications medium;

6 logic configured to select at least one audio/video (A/V) program that is
7 communicated to the at least one RF cable interface over at least one
8 RF cable audio/visual (A/V) network;

9 logic configured to receive the selected at least one A/V program from the RF
10 cable A/V network; and

11 logic configured to provide the received at least one A/V program to at least
12 one audio/video (A/V) customer premise equipment (CPE) device that
13 is electromagnetically connectable to the at least one customer premise
14 A/V communications medium, the at least one A/V program
15 communicated through the at least one A/V CPE interface and over the
16 at least one customer premise A/V communications medium.

1 81. The set-top box of claim 80, wherein the at least one A/V CPE device is selected from
2 the group consisting of: a television, a video recorder, a stereo, and an audio recorder.

1 82. The set-top box of claim 80, wherein the set-top box appears on the RF cable data
2 network to be the same as an ethernet attached cable modem that conforms to at least
3 one version of a DOCSIS (Data-Over-Cable Service Interface Specification) standard.

1 83. The set-top box of claim 82, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the set-top box further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also

5 considered to be assigned to the set-top box, the at least one DOCSIS CPE IP address
6 being different from the at least one DOCSIS CM IP address.

- 1 84. The set-top box of claim 80, wherein the set-top box appears on the RF cable data
2 network to conform to at least one version of a DAVIC (Digital Audio Visual
3 Council) cable modem standard.
- 1 85. The set-top box of claim 80, wherein at least one option card is added to a base unit of
2 the set-top box to provide at least support for the performance of NAT by the set-top
3 box.
- 1 86. The RF cable network device of claim 74, wherein the RF cable network device is a
2 cable modem (CM).
- 1 87. The cable modem of claim 86, wherein the cable modem (CM) appears on the RF
2 cable data network to be the same as an ethernet attached cable modem that conforms
3 to at least one version of a DOCSIS (Data-Over-Cable Service Interface Specification)
4 standard.
- 1 88. The cable modem of claim 87, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the cable modem further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also
5 considered to be assigned to the cable modem, the at least one DOCSIS CPE IP
6 address being different from the at least one DOCSIS CM IP address.
- 1 89. The cable modem of claim 86, wherein the cable modem (CM) appears on the RF
2 cable data network to conform to at least one version of a DAVIC (Digital Audio
3 Visual Council) cable modem standard.

90. The cable modem of claim 86, wherein at least one option card is added to a base unit of the cable modem to provide at least support for the performance of NAT by the cable modem.
 91. The RF cable network device of claim 74, wherein the at least one customer premise data communications medium is at least one wired customer premise data communications medium.
 92. The RF cable network device of claim 91, wherein at least one option card is added to a base unit of the RF cable network device to provide at least support for the at least one wired customer premise data communications medium.
 93. The RF cable network device of claim 91, wherein the at least one wired customer premise data communications medium is at least one communications medium that at least utilizes time-division multiplexing.
 94. The RF cable network device of claim 93, wherein the at least one wired customer premise data communications medium is at least one selection from the group consisting of: RS-232, RS-449, V.35, universal serial bus (USB), ethernet, and token ring.

- 1 95. The RF cable network device of claim 93, wherein the RF cable network device is a
2 set-top box (STB) that further comprises:
3 at least one audio/video (A/V) customer premise equipment (CPE) interface
4 that is electromagnetically connectable to at least one customer
5 premise audio/video (A/V) communications medium;
6 logic configured to select at least one audio/video (A/V) program that is
7 communicated to the at least one RF cable interface over at least one
8 RF cable audio/visual (A/V) network;
9 logic configured to receive the selected at least one A/V program from the RF
10 cable A/V network; and
11 logic configured to provide the received at least one A/V program to at least
12 one audio/video (A/V) customer premise equipment (CPE) device that
13 is electromagnetically connectable to the at least one customer premise
14 A/V communications medium, the at least one A/V program
15 communicated through the at least one A/V CPE interface and over the
16 at least one customer premise A/V communications medium.
- 1 96. The set-top box of claim 95, wherein the at least one A/V CPE device is selected from
2 the group consisting of: a television, a video recorder, a stereo, and an audio recorder.
- 1 97. The set-top box of claim 95, wherein the set-top box appears on the RF cable data
2 network to be the same as an ethernet attached cable modem that conforms to at least
3 one version of a DOCSIS (Data-Over-Cable Service Interface Specification) standard.
- 1 98. The set-top box of claim 97, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the set-top box further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also

5 considered to be assigned to the set-top box, the at least one DOCSIS CPE IP address
6 being different from the at least one DOCSIS CM IP address.

1 99. The set-top box of claim 95, wherein the set-top box appears on the RF cable data
2 network to conform to at least one version of a DAVIC (Digital Audio Visual
3 Council) cable modem standard.

1 100. The RF cable network device of claim 93, wherein the RF cable network device is a
2 cable modem (CM).

1 101. The cable modem of claim 100, wherein the cable modem (CM) appears on the RF
2 cable data network to be the same as an ethernet attached cable modem that conforms
3 to at least one version of a DOCSIS (Data-Over-Cable Service Interface Specification)
4 standard.

1 102. The cable modem of claim 101, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the cable modem further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also
5 considered to be assigned to the cable modem, the at least one DOCSIS CPE IP
6 address being different from the at least one DOCSIS CM IP address.

1 103. The cable modem of claim 100, wherein the cable modem (CM) appears on the RF
2 cable data network to conform to at least one version of a DAVIC (Digital Audio
3 Visual Council) cable modem standard.

1 104. The RF cable network device of claim 91, wherein the at least one wired customer
2 premise data communications medium at least utilizes frequency-division
3 multiplexing.

- 1 105. The RF cable network device of claim 104, wherein the at least one wired customer
2 premise data communications medium is telephone wiring at the customer premise,
3 and wherein IP datagrams are frequency-division multiplexed with a signal for
4 carrying an analog POTS voice-frequency band signal.
- 1 106. The RF cable network device of claim 105, wherein the at least one wired customer
2 premise data communications medium conforms to at least one version of a Home
3 Phoneline Networking Alliance (HPNA) standard.

- 1 107. The RF cable network device of claim 105, wherein the RF cable network device is a
2 set-top box (STB) that further comprises:

3 at least one audio/video (A/V) customer premise equipment (CPE) interface
4 that is electromagnetically connectable to at least one customer
5 premise audio/video (A/V) communications medium;

6 logic configured to select at least one audio/video (A/V) program that is
7 communicated to the at least one RF cable interface over at least one
8 RF cable audio/visual (A/V) network;

9 logic configured to receive the selected at least one A/V program from the RF
10 cable A/V network; and

11 logic configured to provide the received at least one A/V program to at least
12 one audio/video (A/V) customer premise equipment (CPE) device that
13 is electromagnetically connectable to the at least one customer premise
14 A/V communications medium, the at least one A/V program
15 communicated through the at least one A/V CPE interface and over the
16 at least one customer premise A/V communications medium.

- 1 108. The set-top box of claim 107, wherein the at least one A/V CPE device is selected
2 from the group consisting of: a television, a video recorder, a stereo, and an audio
3 recorder.

- 1 109. The set-top box of claim 107, wherein the set-top box appears on the RF cable data
2 network to be the same as an ethernet attached cable modem that conforms to at least
3 one version of a DOCSIS (Data-Over-Cable Service Interface Specification) standard.

- 1 110. The set-top box of claim 109, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the set-top box further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also

5 considered to be assigned to the set-top box, the at least one DOCSIS CPE IP address
6 being different from the at least one DOCSIS CM IP address.

1 111. The set-top box of claim 107, wherein the set-top box appears on the RF cable data
2 network to conform to at least one version of a DAVIC (Digital Audio Visual
3 Council) cable modem standard.

1 112. The RF cable network device of claim 105, wherein the RF cable network device is a
2 cable modem (CM).

1 113. The cable modem of claim 112, wherein the cable modem (CM) appears on the RF
2 cable data network to be the same as an ethernet attached cable modem that conforms
3 to at least one version of a DOCSIS (Data-Over-Cable Service Interface Specification)
4 standard.

1 114. The cable modem of claim 113, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the cable modem further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also
5 considered to be assigned to the cable modem, the at least one DOCSIS CPE IP
6 address being different from the at least one DOCSIS CM IP address.

1 115. The cable modem of claim 112, wherein the cable modem (CM) appears on the RF
2 cable data network to conform to at least one version of a DAVIC (Digital Audio
3 Visual Council) cable modem standard.

1 116. The RF cable network device of claim 104, wherein the at least one wired customer
2 premise data communications medium is electrical power wiring at the customer
3 premise, and wherein IP datagrams is frequency-division multiplexed with a signal for
4 carrying electrical power to appliances at the customer premise.

- 1 117. The RF cable network device of claim 116, wherein the at least one wired customer
2 premise data communications medium conforms to at least one version of at least one
3 protocol selected from the group consisting of: X.10, CEBus, and PowerPacket.

- 1 118. The RF cable network device of claim 116, wherein the RF cable network device is a
2 set-top box (STB) that further comprises:
3 at least one audio/video (A/V) customer premise equipment (CPE) interface
4 that is electromagnetically connectable to at least one customer
5 premise audio/video (A/V) communications medium;
6 logic configured to select at least one audio/video (A/V) program that is
7 communicated to the at least one RF cable interface over at least one
8 RF cable audio/visual (A/V) network;
9 logic configured to receive the selected at least one A/V program from the RF
10 cable A/V network; and
11 logic configured to provide the received at least one A/V program to at least
12 one audio/video (A/V) customer premise equipment (CPE) device that
13 is electromagnetically connectable to the at least one customer premise
14 A/V communications medium, the at least one A/V program
15 communicated through the at least one A/V CPE interface and over the
16 at least one customer premise A/V communications medium.

- 1 119. The set-top box of claim 118, wherein the at least one A/V CPE device is selected
2 from the group consisting of: a television, a video recorder, a stereo, and an audio
3 recorder.

- 1 120. The set-top box of claim 118, wherein the set-top box appears on the RF cable data
2 network to be the same as an ethernet attached cable modem that conforms to at least
3 one version of a DOCSIS (Data-Over-Cable Service Interface Specification) standard.

- 1 121. The set-top box of claim 120, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the set-top box further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also
5 considered to be assigned to the set-top box, the at least one DOCSIS CPE IP address
6 being different from the at least one DOCSIS CM IP address.
- 1 122. The set-top box of claim 118, wherein the set-top box appears on the RF cable data
2 network to conform to at least one version of a DAVIC (Digital Audio Visual
3 Council) cable modem standard.
- 1 123. The RF cable network device of claim 116, wherein the RF cable network device is a
2 cable modem (CM).
- 1 124. The cable modem of claim 123, wherein the cable modem (CM) appears on the RF
2 cable data network to be the same as an ethernet attached cable modem that conforms
3 to at least one version of a DOCSIS (Data-Over-Cable Service Interface Specification)
4 standard.

125. The cable modem of claim 124, wherein the at least one IP address is at least one DOCSIS customer premise equipment (CPE) IP address, the cable modem further comprising logic configured to store information identifying at least one DOCSIS cable modem (CM) IP address, the at least one DOCSIS CM IP address also considered to be assigned to the cable modem, the at least one DOCSIS CPE IP address being different from the at least one DOCSIS CM IP address.
 126. The cable modem of claim 123, wherein the cable modem (CM) appears on the RF cable data network to conform to at least one version of a DAVIC (Digital Audio Visual Council) cable modem standard.
 127. The RF cable network device of claim 74, wherein the at least one customer premise data communications medium is at least one wireless customer premise data communications medium.
 128. The RF cable network device of claim 127, wherein at least one option card is added to a base unit of the RF cable network device to provide at least support for the at least one wireless customer premise data communications medium.
 129. The RF cable network device of claim 128, wherein the at least one wireless customer premise data communications medium conforms to at least one version of at least one protocol selected from the group consisting of: Bluetooth, IEEE 802.11a, IEEE 802.11b, and HomeRF.

- 1 130. The RF cable network device of claim 127, wherein the RF cable network device is a
2 set-top box (STB) that further comprises:

3 at least one audio/video (A/V) customer premise equipment (CPE) interface
4 that is electromagnetically connectable to at least one customer
5 premise audio/video (A/V) communications medium;

6 logic configured to select at least one audio/video (A/V) program that is
7 communicated to the at least one RF cable interface over at least one
8 RF cable audio/visual (A/V) network;

9 logic configured to receive the selected at least one A/V program from the RF
10 cable A/V network; and

11 logic configured to provide the received at least one A/V program to at least
12 one audio/video (A/V) customer premise equipment (CPE) device that
13 is electromagnetically connectable to the at least one customer premise
14 A/V communications medium, the at least one A/V program
15 communicated through the at least one A/V CPE interface and over the
16 at least one customer premise A/V communications medium.

- 1 131. The set-top box of claim 130, wherein the at least one A/V CPE device is selected
2 from the group consisting of: a television, a video recorder, a stereo, and an audio
3 recorder.

- 1 132. The set-top box of claim 130, wherein the set-top box appears on the RF cable data
2 network to be the same as an ethernet attached cable modem that conforms to at least
3 one version of a DOCSIS (Data-Over-Cable Service Interface Specification) standard.

- 1 133. The set-top box of claim 132, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the set-top box further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also

5 considered to be assigned to the set-top box, the at least one DOCSIS CPE IP address
6 being different from the at least one DOCSIS CM IP address.

1 134. The set-top box of claim 132, wherein the set-top box appears on the RF cable data
2 network to conform to at least one version of a DAVIC (Digital Audio Visual
3 Council) cable modem standard.

1 135. The RF cable network device of claim 127, wherein the RF cable network device is a
2 cable modem (CM).

1 136. The cable modem of claim 135, wherein the cable modem (CM) appears on the RF
2 cable data network to be the same as an ethernet attached cable modem that conforms
3 to at least one version of a DOCSIS (Data-Over-Cable Service Interface Specification)
4 standard.

1 137. The cable modem of claim 136, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the cable modem further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also
5 considered to be assigned to the cable modem, the at least one DOCSIS CPE IP
6 address being different from the at least one DOCSIS CM IP address.

1 138. The cable modem of claim 135, wherein the cable modem (CM) appears on the RF
2 cable data network to conform to at least one version of a DAVIC (Digital Audio
3 Visual Council) cable modem standard.

1 139. The RF cable network device of claim 74, wherein the RF cable network device
2 further comprises logic configured to implement a Dynamic Host Configuration
3 Protocol (DHCP) client that dynamically obtains the assignment of the least one IP
4 address.

- 1 140. The RF cable network device of claim 139, wherein the RF cable network device is a
2 set-top box (STB) that further comprises:
3 at least one audio/video (A/V) customer premise equipment (CPE) interface
4 that is electromagnetically connectable to at least one customer
5 premise audio/video (A/V) communications medium;
6 logic configured to select at least one audio/video (A/V) program that is
7 communicated to the at least one RF cable interface over at least one
8 RF cable audio/visual (A/V) network;
9 logic configured to receive the selected at least one A/V program from the RF
10 cable A/V network; and
11 logic configured to provide the received at least one A/V program to at least
12 one audio/video (A/V) customer premise equipment (CPE) device that
13 is electromagnetically connectable to the at least one customer premise
14 A/V communications medium, the at least one A/V program
15 communicated through the at least one A/V CPE interface and over the
16 at least one customer premise A/V communications medium.
- 1 141. The set-top box of claim 140, wherein the at least one A/V CPE device is selected
2 from the group consisting of: a television, a video recorder, a stereo, and an audio
3 recorder.
- 1 142. The set-top box of claim 140, wherein the set-top box appears on the RF cable data
2 network to be the same as an ethernet attached cable modem that conforms to at least
3 one version of a DOCSIS (Data-Over-Cable Service Interface Specification) standard.
- 1 143. The set-top box of claim 142, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the set-top box further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also

5 considered to be assigned to the set-top box, the at least one DOCSIS CPE IP address
6 being different from the at least one DOCSIS CM IP address.

1 144. The set-top box of claim 140, wherein the set-top box appears on the RF cable data
2 network to conform to at least one version of a DAVIC (Digital Audio Visual
3 Council) cable modem standard.

1 145. The RF cable network device of claim 139, wherein the RF cable network device is a
2 cable modem (CM).

1 146. The cable modem of claim 145, wherein the cable modem (CM) appears on the RF
2 cable data network to be the same as an ethernet attached cable modem that conforms
3 to at least one version of a DOCSIS (Data-Over-Cable Service Interface Specification)
4 standard.

1 147. The cable modem of claim 146, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the cable modem further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also
5 considered to be assigned to the cable modem, the at least one DOCSIS CPE IP
6 address being different from the at least one DOCSIS CM IP address.

1 148. The cable modem of claim 145, wherein the cable modem (CM) appears on the RF
2 cable data network to conform to at least one version of a DAVIC (Digital Audio
3 Visual Council) cable modem standard.

1 149. The RF cable network device of claim 74, wherein the RF cable network device
2 further comprises logic configured to perform as a Dynamic Host Configuration
3 Protocol (DHCP) server that assigns at least one customer network IP address to the at

4 least one first CPE data device connected to the at least one customer premise data
5 communications medium.

- 1 150. The RF cable network device of claim 149, wherein the at least one customer network
2 IP address is from a different IP address realm than the at least one IP address for RF
3 cable data network access.

1 151. The RF cable network device of claim 149, wherein the RF cable network device is a
2 set-top box (STB) that further comprises:

3 at least one audio/video (A/V) customer premise equipment (CPE) interface
4 that is electromagnetically connectable to at least one customer
5 premise audio/video (A/V) communications medium;

6 logic configured to select at least one audio/video (A/V) program that is
7 communicated to the at least one RF cable interface over at least one
8 RF cable audio/visual (A/V) network;

9 logic configured to receive the selected at least one A/V program from the RF
10 cable A/V network; and

11 logic configured to provide the received at least one A/V program to at least
12 one audio/video (A/V) customer premise equipment (CPE) device that
13 is electromagnetically connectable to the at least one customer premise
14 A/V communications medium, the at least one A/V program
15 communicated through the at least one A/V CPE interface and over the
16 at least one customer premise A/V communications medium.

1 152. The set-top box of claim 151, wherein the at least one A/V CPE device is selected
2 from the group consisting of: a television, a video recorder, a stereo, and an audio
3 recorder.

1 153. The set-top box of claim 151, wherein the set-top box appears on the RF cable data
2 network to be the same as an ethernet attached cable modem that conforms to at least
3 one version of a DOCSIS (Data-Over-Cable Service Interface Specification) standard.

1 154. The set-top box of claim 153, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the set-top box further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also

5 considered to be assigned to the set-top box, the at least one DOCSIS CPE IP address
6 being different from the at least one DOCSIS CM IP address.

1 155. The set-top box of claim 151, wherein the set-top box appears on the RF cable data
2 network to conform to at least one version of a DAVIC (Digital Audio Visual
3 Council) cable modem standard.

1 156. The RF cable network device of claim 149, wherein the RF cable network device is a
2 cable modem (CM).

1 157. The cable modem of claim 156, wherein the cable modem (CM) appears on the RF
2 cable data network to be the same as an ethernet attached cable modem that conforms
3 to at least one version of a DOCSIS (Data-Over-Cable Service Interface Specification)
4 standard.

1 158. The cable modem of claim 157, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the cable modem further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also
5 considered to be assigned to the cable modem, the at least one DOCSIS CPE IP
6 address being different from the at least one DOCSIS CM IP address.

1 159. The cable modem of claim 156, wherein the cable modem (CM) appears on the RF
2 cable data network to conform to at least one version of a DAVIC (Digital Audio
3 Visual Council) cable modem standard.

1 160. The RF cable network device of claim 72, wherein the RF cable network device is
2 configured to perform the at least one integrated gateway service, the at least one
3 integrated gateway service being selected from the group consisting of: firewall and
4 proxy.

- 1 161. The RF cable network device of claim 160, wherein at least one option card is added
2 to a base unit of the RF cable network device to provide at least support for the at least
3 one integrated gateway service.
- 1 162. The RF cable network device of claim 160, wherein the RF cable network device is a
2 set-top box (STB) that further comprises:
3 at least one audio/video (A/V) customer premise equipment (CPE) interface
4 that is electromagnetically connectable to at least one customer
5 premise audio/video (A/V) communications medium;
6 logic configured to select at least one audio/video (A/V) program that is
7 communicated to the at least one RF cable interface over at least one
8 RF cable audio/visual (A/V) network;
9 logic configured to receive the selected at least one A/V program from the RF
10 cable A/V network; and
11 logic configured to provide the received at least one A/V program to at least
12 one audio/video (A/V) customer premise equipment (CPE) device that
13 is electromagnetically connectable to the at least one customer premise
14 A/V communications medium, the at least one A/V program
15 communicated through the at least one A/V CPE interface and over the
16 at least one customer premise A/V communications medium.
- 1 163. The set-top box of claim 162, wherein the at least one A/V CPE device is selected
2 from the group consisting of: a television, a video recorder, a stereo, and an audio
3 recorder.
- 1 164. The set-top box of claim 162, wherein the set-top box appears on the RF cable data
2 network to be the same as an ethernet attached cable modem that conforms to at least
3 one version of a DOCSIS (Data-Over-Cable Service Interface Specification) standard.

- 1 165. The set-top box of claim 164, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the set-top box further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also
5 considered to be assigned to the set-top box, the at least one DOCSIS CPE IP address
6 being different from the at least one DOCSIS CM IP address.
- 1 166. The set-top box of claim 162, wherein the set-top box appears on the RF cable data
2 network to conform to at least one version of a DAVIC (Digital Audio Visual
3 Council) cable modem standard.
- 1 167. The RF cable network device of claim 160, wherein the RF cable network device is a
2 cable modem (CM).
- 1 168. The cable modem of claim 167, wherein the cable modem (CM) appears on the RF
2 cable data network to be the same as an ethernet attached cable modem that conforms
3 to at least one version of a DOCSIS (Data-Over-Cable Service Interface Specification)
4 standard.

169. The cable modem of claim 168, wherein the at least one IP address is at least one DOCSIS customer premise equipment (CPE) IP address, the cable modem further comprising logic configured to store information identifying at least one DOCSIS cable modem (CM) IP address, the at least one DOCSIS CM IP address also considered to be assigned to the cable modem, the at least one DOCSIS CPE IP address being different from the at least one DOCSIS CM IP address.
 170. The cable modem of claim 167, wherein the cable modem (CM) appears on the RF cable data network to conform to at least one version of a DAVIC (Digital Audio Visual Council) cable modem standard.
 171. The RF cable network device of claim 160, wherein the firewall gateway service performs at least one of the firewall types selected from the group consisting of: packet-filtering, circuit-level gateway, and application layer gateway.
 172. The RF cable network device of claim 171, wherein the packet-filtering firewall type performs state-based packet-filtering.
 173. The RF cable network device of claim 160, wherein the at least one integrated gateway service performs at least one of the gateway service types selected from the group consisting of: circuit-level gateway and application layer gateway.
 174. The RF cable network device of claim 173, wherein the at least one integrated gateway service type operates on IP datagrams.
 175. The RF cable network device of claim 173, wherein the at least one integrated gateway service type converts network layer protocols.

1 176. The RF cable network device of claim 173, wherein the at least one integrated
2 gateway service type converts network protocols between the network layer protocols
3 of IPX (Internet Packet eXchange) and IP (Internet Protocol).

1 177. The RF cable network device of claim 160, wherein the RF cable network device
2 further comprises logic configured to perform as a Dynamic Host Configuration
3 Protocol (DHCP) server that assigns at least one customer network IP address to the at
4 least one first CPE data device connected to the at least one customer premise data
5 communications medium.

1 178. The RF cable network device of claim 177, wherein the RF cable network device is a
2 set-top box (STB) that further comprises:
3 at least one audio/video (A/V) customer premise equipment (CPE) interface
4 that is electromagnetically connectable to at least one customer
5 premise audio/video (A/V) communications medium;
6 logic configured to select at least one audio/video (A/V) program that is
7 communicated to the at least one RF cable interface over at least one
8 RF cable audio/visual (A/V) network;
9 logic configured to receive the selected at least one A/V program from the RF
10 cable A/V network; and
11 logic configured to provide the received at least one A/V program to at least
12 one audio/video (A/V) customer premise equipment (CPE) device that
13 is electromagnetically connectable to the at least one customer premise
14 A/V communications medium, the at least one A/V program
15 communicated through the at least one A/V CPE interface and over the
16 at least one customer premise A/V communications medium.

1 179. The set-top box of claim 178, wherein the at least one A/V CPE device is selected
2 from the group consisting of: a television, a video recorder, a stereo, and an audio
3 recorder.

1 180. The set-top box of claim 178, wherein the set-top box appears on the RF cable data
2 network to be the same as an ethernet attached cable modem that conforms to at least
3 one version of a DOCSIS (Data-Over-Cable Service Interface Specification) standard.

1 181. The set-top box of claim 180, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the set-top box further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also
5 considered to be assigned to the set-top box, the at least one DOCSIS CPE IP address
6 being different from the at least one DOCSIS CM IP address.

1 182. The set-top box of claim 178, wherein the set-top box appears on the RF cable data
2 network to conform to at least one version of a DAVIC (Digital Audio Visual
3 Council) cable modem standard.

1 183. The RF cable network device of claim 177, wherein the RF cable network device is a
2 cable modem (CM).

1 184. The cable modem of claim 183, wherein the cable modem (CM) appears on the RF
2 cable data network to be the same as an ethernet attached cable modem that conforms
3 to at least one version of a DOCSIS (Data-Over-Cable Service Interface Specification)
4 standard.

- 1 185. The cable modem of claim 184, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the cable modem further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also
5 considered to be assigned to the cable modem, the at least one DOCSIS CPE IP
6 address being different from the at least one DOCSIS CM IP address.
- 1 186. The cable modem of claim 183, wherein the cable modem (CM) appears on the RF
2 cable data network to conform to at least one version of a DAVIC (Digital Audio
3 Visual Council) cable modem standard.
- 1 187. The RF cable network device of claim 72, wherein the RF cable network device is
2 configured to perform the at least one integrated gateway service, the at least one
3 integrated gateway service being selected from the group consisting of: tunneling and
4 virtual private networking (VPN).
- 1 188. The RF cable network device of claim 187, wherein at least one option card is added
2 to a base unit of the RF cable network device to provide at least support for the at least
3 one integrated gateway service.

1 189. The RF cable network device of claim 187, wherein the RF cable network device is a
2 set-top box (STB) that further comprises:

3 at least one audio/video (A/V) customer premise equipment (CPE) interface
4 that is electromagnetically connectable to at least one customer
5 premise audio/video (A/V) communications medium;

6 logic configured to select at least one audio/video (A/V) program that is
7 communicated to the at least one RF cable interface over at least one
8 RF cable audio/visual (A/V) network;

9 logic configured to receive the selected at least one A/V program from the RF
10 cable A/V network; and

11 logic configured to provide the received at least one A/V program to at least
12 one audio/video (A/V) customer premise equipment (CPE) device that
13 is electromagnetically connectable to the at least one customer premise
14 A/V communications medium, the at least one A/V program
15 communicated through the at least one A/V CPE interface and over the
16 at least one customer premise A/V communications medium.

1 190. The set-top box of claim 189, wherein the at least one A/V CPE device is selected
2 from the group consisting of: a television, a video recorder, a stereo, and an audio
3 recorder.

1 191. The set-top box of claim 189, wherein the set-top box appears on the RF cable data
2 network to be the same as an ethernet attached cable modem that conforms to at least
3 one version of a DOCSIS (Data-Over-Cable Service Interface Specification) standard.

1 192. The set-top box of claim 191, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the set-top box further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also

5 considered to be assigned to the set-top box, the at least one DOCSIS CPE IP address
6 being different from the at least one DOCSIS CM IP address.

1 193. The set-top box of claim 189, wherein the set-top box appears on the RF cable data
2 network to conform to at least one version of a DAVIC (Digital Audio Visual
3 Council) cable modem standard.

1 194. The RF cable network device of claim 187, wherein the RF cable network device is a
2 cable modem (CM).

1 195. The cable modem of claim 195, wherein the cable modem (CM) appears on the RF
2 cable data network to be the same as an ethernet attached cable modem that conforms
3 to at least one version of a DOCSIS (Data-Over-Cable Service Interface Specification)
4 standard.

1 196. The cable modem of claim 195, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the cable modem further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also
5 considered to be assigned to the cable modem, the at least one DOCSIS CPE IP
6 address being different from the at least one DOCSIS CM IP address.

1 197. The cable modem of claim 194, wherein the cable modem (CM) appears on the RF
2 cable data network to conform to at least one version of a DAVIC (Digital Audio
3 Visual Council) cable modem standard.

1 `198. The RF cable network device of claim 187, wherein the at least one integrated service
2 communicates encapsulated information in IP datagrams over the RF cable network.

- 1 199. The RF cable network device of claim 198, wherein the at least one integrated service
2 at least one service utilizing at least one version of at least one protocol selected from
3 the group consisting of: generic routing encapsulation (GRE), Ascend tunnel
4 management protocol (ATMP), point-to-point tunneling protocol (PPTP), layer two
5 forwarding (L2F) protocol, layer two tunneling protocol (L2TP), IP Security (IPSec),
6 and multi-protocol label switching (MPLS).
- 1 200. The RF cable network device of claim 187, wherein the RF cable network device
2 further comprises logic configured to perform as a Dynamic Host Configuration
3 Protocol (DHCP) server that assigns at least one customer network IP address to the at
4 least one first CPE data device connected to the at least one customer premise data
5 communications medium.

1 201. The RF cable network device of claim 200, wherein the RF cable network device is a
2 set-top box (STB) that further comprises:

3 at least one audio/video (A/V) customer premise equipment (CPE) interface
4 that is electromagnetically connectable to at least one customer
5 premise audio/video (A/V) communications medium;

6 logic configured to select at least one audio/video (A/V) program that is
7 communicated to the at least one RF cable interface over at least one
8 RF cable audio/visual (A/V) network;

9 logic configured to receive the selected at least one A/V program from the RF
10 cable A/V network; and

11 logic configured to provide the received at least one A/V program to at least
12 one audio/video (A/V) customer premise equipment (CPE) device that
13 is electromagnetically connectable to the at least one customer premise
14 A/V communications medium, the at least one A/V program
15 communicated through the at least one A/V CPE interface and over the
16 at least one customer premise A/V communications medium.

1 202. The set-top box of claim 201, wherein the at least one A/V CPE device is selected
2 from the group consisting of: a television, a video recorder, a stereo, and an audio
3 recorder.

1 203. The set-top box of claim 201, wherein the set-top box appears on the RF cable data
2 network to be the same as an ethernet attached cable modem that conforms to at least
3 one version of a DOCSIS (Data-Over-Cable Service Interface Specification) standard.

1 204. The set-top box of claim 203, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the set-top box further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also

5 considered to be assigned to the set-top box, the at least one DOCSIS CPE IP address
6 being different from the at least one DOCSIS CM IP address.

1 205. The set-top box of claim 201, wherein the set-top box appears on the RF cable data
2 network to conform to at least one version of a DAVIC (Digital Audio Visual
3 Council) cable modem standard.

1 206. The RF cable network device of claim 200, wherein the RF cable network device is a
2 cable modem (CM).

1 207. The cable modem of claim 206, wherein the cable modem (CM) appears on the RF
2 cable data network to be the same as an ethernet attached cable modem that conforms
3 to at least one version of a DOCSIS (Data-Over-Cable Service Interface Specification)
4 standard.

1 208. The cable modem of claim 207, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the cable modem further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also
5 considered to be assigned to the cable modem, the at least one DOCSIS CPE IP
6 address being different from the at least one DOCSIS CM IP address.

1 209. The cable modem of claim 206, wherein the cable modem (CM) appears on the RF
2 cable data network to conform to at least one version of a DAVIC (Digital Audio
3 Visual Council) cable modem standard.

1 210. A method of implementing at least one integrated gateway service in a radio
2 frequency (RF) cable network device, the method comprising the steps performed in
3 the RF cable network device of:

4 providing at least one RF cable interface that is attachable to at least one RF
5 cable, the at least one RF cable being at least part of an RF cable data
6 network, the at least one RF cable at least providing downstream
7 communications in the RF cable data network, the RF cable data
8 network providing bi-directional data connectivity between the RF
9 cable network device at a customer premise and a cable modem
10 termination device;

11 providing at least one customer premise data interface that is
12 electromagnetically connectable to at least one customer premise data
13 communications medium, the at least one customer premise data
14 communications medium further being electromagnetically
15 connectable to at least one first customer premise equipment (CPE)
16 data device, the at least one RF cable interface and the at least one
17 customer premise data interface capable of providing at least part of a
18 communications facility that can be used in a conveyance of data
19 between the at least one first CPE data device and the at least one RF
20 cable interface;

21 storing information identifying at least one IP address, the at least one IP
22 address being assigned to the RF cable network device;

23 maintaining information that provides a forward direction mapping between
24 first upstream data and second upstream data, the first upstream data
25 being received on the at least one customer premise data interface and
26 being received from the at least one first CPE data device, the second
27 upstream data being transmitted into the RF cable data network and
28 being transmitted by the RF cable network device;

29 maintaining information that provides a reverse direction mapping between
30 first downstream data and second downstream data, the first
31 downstream data being received on the at least one RF cable interface
32 and being received from the RF cable data network, the second
33 downstream data being transmitted on the at least one customer

34 premise data interface and being transmitted by the RF cable network
35 device;
36 receiving at least one first medium access control (MAC) frame that is at least
37 part of the first upstream data;
38 forming at least one first IP datagram at least based upon the at least one first
39 MAC frame, at least based upon the at least one IP address, and at least
40 based upon the forward direction mapping, the at least one first IP
41 datagram comprising a source IP address field, the at least one IP
42 address being placed into the source IP address field of the at least one
43 first IP datagram;
44 transmitting the at least one first IP datagram that is at least part of the second
45 upstream data;
46 receiving at least one second IP datagram that is at least part of the first
47 downstream data, the at least one second IP datagram comprising a
48 destination IP address field that contains the at least one IP address;
49 forming at least one second medium access control (MAC) frame at least
50 based upon the at least one second IP datagram, at least based upon the
51 at least one IP address, and at least based upon the reverse direction
52 mapping; and
53 transmitting the at least one second MAC frame that is at least part of the
54 second downstream data.

1 211. The method of claim 210, wherein the RF cable data network further comprises at
2 least one telco return path that at least provides upstream communications in the RF
3 cable data network.

1 212. The method of claim 210, wherein the at least one first MAC frame comprises a third
2 IP datagram, wherein the at least one second MAC frame comprises a fourth IP
3 datagram, and wherein the method of implementing at least one integrated gateway

4 service is used in performing network address translation (NAT), NAT being a
5 gateway service that translates information in IP datagrams.

1 213. The method of claim 212, wherein the logic configured to perform NAT performs at
2 least one type of NAT selected from the group consisting of: traditional NAT, basic
3 NAT, network address-port translation (NAPT), bi-directional NAT, and twice NAT.

1 214. The method of claim 210, wherein the method of implementing at least one integrated
2 gateway service is used in performing at least one type of service that is selected from
3 the group consisting of: firewall and proxy.

1 215. The method of claim 210, wherein the method of implementing at least one integrated
2 gateway service is used in performing at least one type of service that is selected from
3 the group consisting of: tunneling and virtual private networking (VPN).

1 216. A radio frequency (RF) cable network device with integrated user processes, the
2 device comprising:

3 at least one RF cable interface that is attachable to at least one RF cable, the at
4 least one RF cable being at least part of an RF cable data network, the
5 at least one RF cable at least providing downstream communications in
6 the RF cable data network, the RF cable data network providing bi-
7 directional data connectivity between the RF cable network device at a
8 customer premise and a cable modem termination device;

9 logic configured to store at least one cable modem (CM) IP address assigned
10 to the RF cable network device;

11 logic configured to store at least one customer premise equipment (CPE) IP
12 address assigned to the RF cable network device, the at least one CPE
13 IP address being different from the at least one CM IP address; and

14 logic configured to provide at least one user process, the at least one CPE IP
15 address being in a source IP address field of at least one first IP
16 datagram that carries information from the at least one user process, the
17 at least one first IP datagram being communicated over the RF cable
18 data network.

1 217. The RF cable network device of claim 216, wherein the RF cable data network further
2 comprises at least one telco return path that at least provides upstream
3 communications in the RF cable data network.

- 1 218. The RF cable network device of claim 216, wherein the RF cable network device
2 further comprises logic configured to run at least one management and configuration
3 application that communicates with service provider equipment and that is used to
4 manage and configure the RF cable network device, the at least one CM IP address
5 being in a source IP address field of at least one second IP datagram that carries
6 information from the at least one management and configuration application, the at
7 least one second IP datagram being communicated over the RF cable data network.
- 1 219. The RF cable network device of claim 218, wherein the at least one management and
2 configuration application uses at least version of at least one of the protocols selected
3 from the group consisting of: bootstrap protocol (BOOTP), dynamic host
4 configuration protocol (DHCP), trivial file transfer protocol (TFTP), and simple
5 network management protocol (SNMP).
- 1 220. The RF cable network device of claim 216, wherein the at least one user process
2 communicates over the RF cable network using at least one version of at least one
3 TCP/IP (transmission control protocol/internet protocol) suite application protocol
4 that is selected from the group of consisting of: telnet, rlogin, file transfer protocol
5 (FTP), network file system (NFS), electronic mail, simple mail transfer protocol
6 (SMTP), post office protocol (POP), internet message access protocol (IMAP),
7 multipurpose internet mail extensions (MIME), hyper-text transfer protocol (HTTP),
8 and real-time transport protocol (RTP).
- 1 221. The RF cable network device of claim 216, wherein the at least one user process
2 provides at least one gateway service selected from the group consisting of: network
3 address translation (NAT), firewall, proxy, tunneling, and virtual private networking
4 (VPN).

1 222. The RF cable network device of claim 216, wherein the RF cable network device is a
2 set-top box (STB) that further comprises:
3 at least one audio/video (A/V) customer premise equipment (CPE) interface
4 that is electromagnetically connectable to at least one customer
5 premise audio/video (A/V) communications medium;
6 logic configured to select at least one audio/video (A/V) program that is
7 communicated to the at least one RF cable interface over at least one
8 RF cable audio/visual (A/V) network;
9 logic configured to receive the selected at least one A/V program from the RF
10 cable A/V network; and
11 logic configured to provide the received at least one A/V program to at least
12 one audio/video (A/V) customer premise equipment (CPE) device that
13 is electromagnetically connectable to the at least one customer premise
14 A/V communications medium, the at least one A/V program
15 communicated through the at least one A/V CPE interface and over the
16 at least one customer premise A/V communications medium.

1 223. The set-top box of claim 222, wherein the at least one A/V CPE device is selected
2 from the group consisting of: a television, a video recorder, a stereo, and an audio
3 recorder.

1 224. The set-top box of claim 222, wherein the set-top box appears on the RF cable data
2 network to be the same as an ethernet attached cable modem that conforms to at least
3 one version of a DOCSIS (Data-Over-Cable Service Interface Specification) standard.

1 225. The set-top box of claim 222, wherein the set-top box appears on the RF cable data
2 network to conform to at least one version of a DAVIC (Digital Audio Visual
3 Council) cable modem standard.

- 1 226. The RF cable network device of claim 216, wherein the RF cable network device is a
2 cable modem (CM).
- 1 227. The cable modem of claim 226, wherein the cable modem (CM) appears on the RF
2 cable data network to be the same as an ethernet attached cable modem that conforms
3 to at least one version of a DOCSIS (Data-Over-Cable Service Interface Specification)
4 standard.
- 1 228. The cable modem of claim 226, wherein the at least one IP address is at least one
2 DOCSIS customer premise equipment (CPE) IP address, the cable modem further
3 comprising logic configured to store information identifying at least one DOCSIS
4 cable modem (CM) IP address, the at least one DOCSIS CM IP address also
5 considered to be assigned to the cable modem, the at least one DOCSIS CPE IP
6 address being different from the at least one DOCSIS CM IP address.
- 1 229. The cable modem of claim 226, wherein the cable modem (CM) appears on the RF
2 cable data network to conform to at least one version of a DAVIC (Digital Audio
3 Visual Council) cable modem standard.

230. A method of implementing at least one integrated user process in a radio frequency (RF) cable network device, the method comprising the steps performed in the RF cable network device of:

providing at least one RF cable interface that is attachable to at least one RF cable, the at least one RF cable being at least part of an RF cable data network, the at least one RF cable at least providing downstream communications in the RF cable data network, the RF cable data network providing bi-directional data connectivity between the RF cable network device at a customer premise and a cable modem termination device;

storing at least one cable modem (CM) IP address assigned to the RF cable network device;

storing at least one customer premise equipment (CPE) IP address assigned to the RF cable network device, the at least one CPE IP address being different from the at least one CM IP address; and

providing at least one user process, the at least one CPE IP address being in a source IP address field of at least one IP datagram that carries information from the at least one user process, the at least one IP datagram being communicated over the RF cable data network.

231. The method claim 230, wherein the RF cable data network further comprises at least one telco return path that at least provides upstream communications in the RF cable data network.

- 1 232. The method of claim 230 further comprising the step of running at least one
2 management and configuration application that communicates with service provider
3 equipment and that is used to manage and configure the RF cable network device, the
4 at least one CM IP address being in a source IP address field of at least one second IP
5 datagram that carries information from the at least one management and configuration
6 application, the at least one second IP datagram being communicated over the RF
7 cable data network.
- 1 233. The method of claim 232, wherein the at least one management and configuration
2 application uses at least version of at least one of the protocols selected from the
3 group consisting of: bootstrap protocol (BOOTP), dynamic host configuration
4 protocol (DHCP), trivial file transfer protocol (TFTP), and simple network
5 management protocol (SNMP).
- 1 234. The method of claim 230, wherein the at least one user process communicates over
2 the RF cable network using at least one version of at least one TCP/IP (transmission
3 control protocol/internet protocol) suite application protocol that is selected from the
4 group of consisting of: telnet, rlogin, file transfer protocol (FTP), network file system
5 (NFS), electronic mail, simple mail transfer protocol (SMTP), post office protocol
6 (POP), internet message access protocol (IMAP), multipurpose internet mail
7 extensions (MIME), hyper-text transfer protocol (HTTP), and real-time transport
8 protocol (RTP).
- 1 235. The method of claim 230, wherein the at least one user process provides at least one
2 gateway service selected from the group consisting of: network address translation
3 (NAT), firewall, proxy, tunneling, and virtual private networking (VPN).